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ENVIRONMENT

Ms. Tanya Mitchell
Remediation Project Manager
United States Environmental Protection Agency, Region 2
290 Broadway, 19th Floor
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Subject:
Rolling Knolls Landfill Superfund Site
Revised Data Gaps Sampling and Analysis Plan and
Quality Assurance Project Plan

Date:
October 29, 2014

Contact:
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Our ref:
B0033203.0004

Dear Ms. Mitchell:

The revised Data Gaps Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) for the Rolling Knolls Landfill Superfund Site in Chatham, New Jersey are attached for your review and approval. These documents were initially submitted to the USEPA in September 2014. We received your comments on October 9, 2014, and discussed them with USEPA in a conference call on October 15, 2014. The documents have been revised in accordance with your comments and the subsequent discussions.

To facilitate your review, the remainder of this letter provides your comments from the October 9, 2014 letter, with responses *in italics* after each comment.

General Comments

1) The sampling and analysis plan appears to be designed to be a much targeted approach, only sampling for contaminants that previously exceeded site remediation standards in a nearby soil sample. However, the nature of contamination at the site appears to be highly variable and the targeted sampling approach seems to ignore the possibility of any of the other site related contaminants of concern (those not found in the nearby discrete soil sample) to be elevated above site remediation standards in these areas. This is particularly concerning in areas where sample locations may be modified to be located further from the original soil sample due to the edge of the landfill being confirmed to be different than what was previously estimated/delineated. The sampling approach should be adjusted, and all samples

within and outside the newly delineated waste materials should be sampled for all of the site related contaminants.

Response: No response required.

2) Although the locations of the permanent monitoring wells are provided on the map, their final locations will be agreed upon depending on the results from the soil samples and temporary well investigation.

Response: Agreed. We will propose the final locations of the new permanent monitoring wells after the data from soil, sediment, surface water, pore water samples and temporary monitoring wells are available.

3) EPA comments and recommendations provided for the Sampling and Analysis Plan should be incorporated into the QAPP, as appropriate.

Response: USEPA's comments on the SAP have also been incorporated into the QAPP.

4) Please ensure that EPA is provided with an Electronic Data Deliverable (EDD) submittal of all recent data following the step-by-step instructions provided in the EPA Region 2 EDD webpage. http://www.epa.gov/region2/superfund/medd.htm.

Response: During our conference call on October 15, 2014, USEPA indicated that this comment referred to the data collected from this time forward. We will provide EDDs as required. This has been addressed in WS 14/16 of the QAPP. ARCADIS will provide an EDD of the most recent validated data in the EPA Region 2 EDD format.

Specific Comments

1) Section 1.1 Objectives: Please include the following bullet, "Assess the Data Gaps identified in EPA's August 12, 2014 email attachment.

Response: This change has been made in the SAP.

2) Section 1.1 Objectives, bullet 1: The NJDEP specific requirements in the Technical Requirements for Site Remediation can be found in Section N.J.A.C. 7:26E-4.2, Remedial Investigation of Soil. It is not clear what is meant by

"SRS," please revise to clarify that the NJDEP Remedial Investigation of Soil requirements will be met.

Response: SRS is the acronym for the New Jersey Soil Remediation Standards. During our discussion on October 15, 2014, the USEPA stated that the NJDEP's Technical Requirements for Site Remediation, Section 4.2, Remedial Investigation of Soil requirements apply to the work proposed in the Data Gaps SAP, and do not apply to work conducted previously. The text of the SAP has been revised to indicate that the provisions of Section 4.2 of the NJDEP's Technical Requirements for Site Remediation will be met during implementation of the SAP. Data that may be considered for delineation include the depth of the landfilled materials, groundwater quality data, presence of a thick clay layer beneath the site, and other factors.

3) Section 1.1 Objectives, bullets 1, 2 and 4: The use of the term "certain constituents" is confusing in this summary of the objectives of the investigation. The objective of the data gap sampling is to further delineate the constituents at the site not "certain constituents." Please delete the word "certain" from each sentence and replace with "site."

Response: This change has been made in the SAP.

4) Section 1.1 Objectives, bullet 6: Please revise as follows: "Investigate the connection between groundwater and surface water on site." It is agreed that sampling is being performed in the ponds but, the bigger picture is to understand the hydrologic connection between the surface water and groundwater on site.

Response: This change has been made in the SAP.

5) Section 2.1 Site Description: Please add a brief summary in the site description summarizing site geology and hydrogeology. In particular, a summary of the current understanding of groundwater flow. In addition, please make the following edits:

The Rolling Knolls Landfill site is an approximately 200-acre, unlined, former municipal landfill located at 35 Britten Road in the Green Village section of Chatham Township, Morris County, New Jersey. The facility is bound by the Great Swamp National Wildlife Refuge to the east, south, and west; Loantaka Brook and private property to the west; and private residential properties to the north and northwest. The Rolling Knolls Landfill overlaps the Refuge on its eastern and southern sides. (Figure 1). As discussed in Sections 2.2.1 and 3.1 of the SCSR, observations made

during test pit excavation (which, for that investigation, included hand auger borings in areas where proposed test pit locations were not accessible to excavation equipment) show that the waste material that constitutes the landfill occupies approximately 170 acres. This includes 141 acres where waste has been filled, and the western portion of the site which consists of 29 acres where a thin layer of waste and debris has been observed on but not below the ground surface (i.e., the surface debris area). Figure 2 presents a Site Plan, which depicts the estimated landfill boundary, as understood prior to RI activities, as well as the estimated boundaries of the landfill and surface debris area, based on visual observations and test pit activities.

As shown on Figure 2, the central and western portions of the site are owned by Robert J. Miele as Trustee for the Trust created by the Last Will and Testament of Angelo J. Miele, the former landfill operator. Eastern and southern portions of the site are located within the Great Swamp National Wildlife Refuge (GSNWR) and owned by the United States Fish & Wildlife Service (USFWS). A northeastern portion of the site occurs on a parcel owned by the Green Village Fire Department, which also includes a baseball field and shooting range. Although the baseball field and shooting range are located within the estimated landfill boundary that was approximated prior to RI activities, test pit activities indicated that no landfilling occurred in these areas (Figure 2).

Physical access to the majority of the site is limited by a chained gate on Britten Road; wet areas and brooks along the eastern, western and southern boundaries; and the exclusion of visitors to the Wilderness Area section of the GSNWR located on a portion of the site and to the east and south. Black Brook is located east and south of the estimated landfill boundary and generally flows southward and westward in these respective areas. Loantaka Brook is located west of the estimated landfill boundary and flows southward. Residential properties are located north of the site and west of Loantaka Brook. The surrounding area is sparsely populated, consisting of individual residential properties on large parcels and undeveloped open spaces.

Current land use includes commercial/industrial and recreational uses; available data indicate that residents do not live within 200 feet of the estimated landfill boundary. Portions of the site are used for equipment storage by two landscaping companies. Therefore, workers are present at times to deliver, retrieve or maintain landscaping equipment and supplies. In addition, recreators may occasionally hunt on other portions of the site or use the softball field and shooting range.

Response: These changes have been made in the SAP. The reference to the 170 acres of landfilled material will be removed to avoid confusion with the reference to 200 acres inserted by USEPA.

6) Section 2.3 Investigative History, paragraphs 2 and 7: The correct designation for the Region is "USEPA Region 2". Please make appropriate edits.

Response: This change has been made in the SAP.

7) Section 2.3 Investigative History, last paragraph: Since the RI is not complete or finalized please make the following correction "After the Agreement was signed, the Settling Parties conducted an extensive site ~~remedial~~ investigation sampling between June 2006 and January 2010.

Response: This change has been made in the SAP.

8) Section 2.5 Summary of the Results in the SCSR: Please incorporate the following edits. In addition, some of the statements were removed as they were found to be premature since we are still conducting investigation sampling at the site:

The results of the investigations ~~indicate~~: includes:

- The estimated landfill boundary covers 141 …..
- Surface and subsurface soil impacts were identified across the site ~~landfill~~. Few, …. western portion of the ~~landfill~~ site and along the western and southwestern perimeter of the site ~~landfill~~. The baseball field and shooting range …. identify landfill debris in ~~-related impacts to~~ soil in those areas.
- Two areas of impacted groundwater were observed in the shallow water-bearing zone…~~These impacts to the shallow water-bearing zone are not widespread.~~
- Sub-slab soil gas from beneath the Hunt Club building, which is not currently used ~~neither constructed~~ for residential occupancy ~~nor likely to be used for residential occupancy in the future,~~ was investigated. ….. ~~Furthermore, analytical results for groundwater and soil suggest that widespread soil gas impacts are not expected at the landfill.~~

Surface water …. ~~landfill~~ site. Many of these constituents are also found in surface water and sediment upstream of the site ~~landfill~~. Therefore, their presence in the streams ~~is at least~~ may be in part due to sources upgradient of the site~~landfill~~.

Response: These changes have been made in the SAP.

9) Section 3.1.3 Freshwater Wetlands Permits/Permit Equivalencies, paragraph 1: For CERCLA sites, the NJDEP issues permit equivalencies. All the information that is required to obtain a regular permit must be submitted to obtain a permit equivalency. No fees or public notices are required. Work that is subject to the freshwater wetlands regulations cannot begin until the permit equivalencies are issued by NJDEP. Please clarify the text in the document to reflect that requirement, and adjust the schedule appropriately.

Response: The appropriate wetland permit equivalencies have been completed and will be submitted to the NJDEP prior to the start of work. Consistent with the CERCLA provision for permit equivalencies, approval of these permits is not required. Therefore, we can begin work once the permits have been submitted to NJDEP. Previous work at the site was conducted under permit equivalencies prepared and submitted the same way. This approach was discussed with USEPA during our conference call on October 15, 2014.

10) Section 3.2.1 Soil Sample locations, paragraphs 2 and 3: This section states the "purpose of the soil sampling is to delineate the extent of any constituents associated with the landfill in the adjacent native soil off the landfill." EPA has previously commented that the purpose is to define the extent of contamination above NJ soil cleanup objectives. While the approach here does seem valid to delineate the horizontal extent of contamination, it is unclear how this soil sampling program does anything to delineate the depth of soil contamination in the landfill areas and off the landfill where samples are proposed to only be collected from 0-1 ft bgs. Please modify SAP to ensure that this data gap is being met.

Please make the following edits:

The soil sampling locations proposed ~~in the Preliminary Plan~~ (sample numbers SS-125 through SS-158) are in native soil near previous soil samples ~~on~~ along the estimated landfill boundary where … are located southern and western portion of the site~~landfill~~.

Sampling at …. 25 feet from the edge of the estimated landfill boundary …… (The approximate location of the edge of the estimated landfill boundary is shown in pink in Figure 2, … associated with the site~~landfill~~ in the adjacent native soil ~~off the landfill~~. Therefore, …. edge of the estimated landfill boundary differs from that shown in Figure 2.) All soil ~~The inner~~ samples will be analyzed for full TCL/TAL parameters including PCBs as arcoclors. Certain SVOCs in the TCL will be analyzed by selective ion monitoring (SIM) to obtain a lower detection limit. If PCBs are detected, these samples may be analyzed for PCB congeners, dioxins, and furans.~~the specific constituents that exceeded SRSs in the initial sample on the landfill.~~ If the results of these analyses exceed the SRSs, samples from the outer line will be analyzed for the same parameters ~~those specific constituents~~. If the results from the outer line also exceed the SRSs, additional sampling may be needed to complete delineation. ~~Initial and contingency~~ All soil sample analyses are summarized in Table 1.

Response: The Data Gaps SAP has been designed to help define the area where remediation is necessary, and to provide data to support the Baseline Ecological Risk Assessment (BERA). The proposed "step out" approach will provide the horizontal delineation required to define the extent of constituents at concentrations above the SRS. The depth of the soil samples was selected because wildlife generally only contacted the shallowest 1 foot of the soil column. Therefore, these data are adequate for the BERA. No deeper sampling is proposed at this time.

The edits requested by USEPA have been made to the text of the SAP.

11) Section 3.2.2 Soil Sampling Procedures, paragraph 3: Please indicate specifically where the VOC sample will be collected, for example from the zone with the highest PID hit, zones showing discoloration, presence of waste materials, etc.

Response: This change has been made in the SAP.

12) Section 3.2.2 Soil Sampling Procedures, paragraph 4: If adequate sample volume cannot be obtained after four attempts please specify that a soil sample will be attempted at the secondary location (the next ring out).

Response: This change has been made in the SAP.

13) Section 3.2.3 Soil Samples Analyses: Please make the following edits:

Soil samples will be analyzed for the constituents indicated in Table 1. Sample~~s proposed in the Preliminary Plan (~~locations SS-125 through SS-158~~) will be analyzed for specific constituents based on the results of nearby samples on the landfill. Samples at~~ and locations SS-159 though SS-164, which were requested by USEPA (USEPA letter of July 30, 2014), will be analyzed for full TCL/TAL parameters. Certain SVOCs in the TCL will be analyzed by selective ion monitoring (SIM) to obtain a lower detection limit. If PCBs are detected, up to two of these samples (SS-159 though SS-164) may be analyzed for PCB congeners, dioxins, and furans.

Response: These changes have been made in the SAP.

14) Section 3.3.2 Temporary Monitoring Well Installation and Sampling Procedures, paragraph 1: The soil collection and screening being performed in conjunction with the temporary monitoring well installation is an opportunity to collect additional soil samples in these areas immediately upgradient from MW-3 and MW-10. Analytical sampling of the soils above the water table for the contaminants found in MW-3 and MW-10 should be considered in these areas.

Response: Additional soil sampling will be evaluated after the results of the temporary monitoring well samples are received and reviewed.

15) Section 3.3.3 Analysis of groundwater samples from Temporary Wells: Please make the following correction. “Groundwater samples from temporary monitoring wells will be analyzed for full TCL/TAL metals (filtered and unfiltered) and cyanide. Certain SVOCs in the TCL will be analyzed by selective ion monitoring (SIM) to obtain a lower detection limit.

Response: This change has been made in the SAP.

16) Section 3.4.1 Pore-Water Sampler locations, paragraph 1: The purpose of the pore-water sampling is delineate contamination in groundwater at the site. Thus, please replace the two references to “VOCs” with “contaminants.”

Response: This change has been made in the SAP.

17) Section 3.5.3 Monitoring Well Development/Redevelopment, paragraph 1: Please provide details on the criteria that will be used to determine when redevelopment of existing monitoring wells is complete.

Response: The redevelopment criteria for the existing wells have been added to the SAP.

18) Section 3.5.4.1 Evaluation of Hydraulic Connection of Northern Ponds to Groundwater: Please provide additional details on the frequency of water level and level gauge measurements detailed in this section. It is unclear if the intent is to collect continuous measurements via data transducers or discrete measurements over a period of 4-months.

Although it is assumed, please clarify if precipitation would also be measured during the 4-month period when the surface water levels of the two ponds and water levels in MW-9 and MW-11 are being monitored.

Response: Additional information on the water level measurements and collection of precipitation data has been added to the SAP.

19) Section 3.5.4.2 Site-Wide Groundwater Elevation Measurements, paragraph 2: Please make the following edits: In addition … located near the northern edge of the estimated landfill boundary (Figure 3a), and the large pond near the western edge of the estimated landfill boundary (Figure 3b) prior to groundwater sampling.

Response: These changes have been made in the SAP.

20) Section 3.5.5 Monitoring Well Sampling Procedures, paragraph 1: It is not clear why the second round of sampling at the new monitoring wells is only 30 days after the initial sampling. It is typical to collect a second round of samples during a different time period to provide seasonal variation (wet season vs. dry season). Please revise to perform the second round of sampling spring 2015.

During the second event, groundwater samples will be collected from ~~only the newly installed~~ all monitoring wells.

Response: The text of the SAP and the schedule have been amended to reflect the change to approximately 90 days between groundwater sampling events.

Based on the discussion during the October 15, 2014 conference call with the USEPA, the Settling Parties have decided to collect groundwater samples from all existing monitoring wells during 2014. The samples will be analyzed for full TCL/TAL metals and cyanide (both filtered and unfiltered). Certain SVOCs in the TCL will be analyzed by selective ion monitoring (SIM) to obtain a lower detection limit. The results of this sampling will used to determine what additional groundwater sampling is needed at these wells to support an evaluation of monitored natural attenuation (MNA).

21) Section 3.5.6 Analysis of Groundwater Samples from Permanent Monitoring Wells: Please make the following edit: **"**Existing monitoring wells will be analyzed ~~for VOCs and metals~~ for full TCL/TAL metals and cyanide (both filtered and unfiltered). Certain SVOCs in the TCL will be analyzed by selective ion monitoring (SIM) to obtain a lower detection limit."

Response: This change has been made in the SAP.

22) Section 3.6 Surface-Water Sampling and 3.7 Sediment Sampling: It is noted that if some of the water bodies are ephemeral or smaller than what is illustrated on the site map they may not be sampled. This procedure may not be appropriate in all situations. It may be useful to collect a sediment sample even if there is no surface water present. Additionally, it is not clear what size water body would satisfy the requirements of the sampling plan. Please provide additional details. Should this situation (water bodies are ephemeral or smaller than what is illustrated) occur and an area is proposed for elimination, EPA would like to be notified in real time to provide guidance on how to proceed.

Response: Surface water and sediment samples will be collected if any standing water is observed at the proposed sampling locations. This change has been made to the SAP.

23) Section 3.6.1 Surface-Water Sampling Locations, paragraph 1: Surface-water samples … on the site~~landfill~~ that were not sampled during the previous investigations. In addition, … located southwest of the estimated landfill boundary, ….

Response: These changes have been made in the SAP.

24) Section 3.7.1 Sediment Sampling Locations, paragraph 1: Sediment samples will ….site l~~andfill~~ that were not sampled during the previous investigations. In addition, … located southwest of the estimated landfill boundary, …..

Response: These changes have been made in the SAP.

25) Section 3.1 Assessment of Hunt Club Well HC-1: EPA agrees that the final disposition of the well will be decided after the investigation is complete. If it is determined that this well will be abandoned, EPA may require another well to be installed in the same general area. This was previously discussed during our meeting on August 19, 2014, and the purpose of installing another well in this area is to continue to collect information on groundwater quality in this area.

Response: A decision on whether to abandon the existing Hunt Club well will be made after the video log has been obtained and reviewed. Abandonment would require the property owner's concurrence.

26) Section 3.10.1 Interim Technical Memorandum: Please revise the interim technical memorandum to also include the sediment and surface water samples.

Response: This change has been made to the SAP.

27) Section 4.0 Schedule: The schedule did not include the timeline of when the investigations to evaluate the hydraulic connection of the ponds to the groundwater will occur. Please include this information.

Response: The schedule has been updated to reflect this change and the other changes discussed above.

Tables

Table 1, Sampling Locations, Depths, and Analyses:

A revised Table 1 is provided to display the requested analysis. However, the Notes and Footers should be modified to reflect the changes. Table 1 has been modified to reflect the following:

Soil Samples: All soil samples should be analyzed for full TCL/TAL parameters including PCBs as Aroclors. Certain SVOCs in the TCL will be analyzed by selective

ion monitoring (SIM) to obtain a lower detection limit. If PCBs are detected, these samples may be analyzed for PCB congeners, dioxins, and furans.

Groundwater and Pore Water Samples: All groundwater and pore water samples should be analyzed for full TCL/TAL metals (filtered and unfiltered) and cyanide. Certain SVOCs in the TCL will be analyzed by selective ion monitoring (SIM) to obtain a lower detection limit.

Aqueous pore water samples should be collected as the sampling devices allow, starting with collection of VOCs, followed by PCBs, pesticides and SVOCs. Bottles for metals analyses would be filled last. All efforts should be taken with the laboratory to determine the minimum amount of water needed for each analysis.

Response: These changes, and other changes to ensure consistency with the revised text of the SAP, have been made to Table 1.

EPA's Comments on the Quality Assurance Project Plan for the Data Gaps Sampling and Analysis Plan, September 2014, Rolling Knolls Landfill Superfund Site, Chatham, New Jersey

General Comments:
1) Measurement Performance Criteria should be established from project DQOs, not by simply referencing the analytical methods. Acceptance criteria for instrument and batch QC (e.g. acceptance ranges for spike recoveries) should be explicitly specified for each analyte/parameter for each chemical method. Alternatively the laboratory specific ranges should be appended to the QAPP to allow review and ensure that the criteria are applicable to the project objectives.

Response: The laboratory control limits are submitted at the end of Appendix B of the QAPP.

2) Please attach all field standard operating procedures (SOPs) to the QAPP to allow review.

Response: All field SOPs listed in Worksheet #21 are in Appendix A of the QAPP, which starts on page 162 (pdf) of the QAPP.

3) Overall, conclusions regarding the extent of contamination, which are mostly contained within QAPP Worksheet #10: Conceptual Site Model – Nature and Extent

of Constituents, should be limited. Since the purpose of the Data Sampling Action Plan is to close these data gaps and finalize the extent of contamination with these data, it is premature to make such conclusions at this time. Please revise.

Specifically:
Constituent Sources: the last sentence states, "Based on the conditions within the landfill boundary, historical information regarding landfill disposal and maintenance activities, and the nature and extent of constituents in environmental media, it is probable that only a small amount of industrial waste has been disposed of at the landfill." In general, this statement should be avoided since the "amount" of industrial waste is unknown. Instead, EPA suggests that the industrial waste is referred to as relatively less than municipal waste.
Groundwater: paragraph discussing VOCs found in MW-10. It states "Impacted groundwater at this well is considered localized" The Data Gap SAP will help us to answer this question on whether VOCs are localized. Thus, this conclusion should be removed.
Overview of the Landfill: In the 4th paragraph it states, "Based on the absence of these constituents in nearby wells, the constituents found in groundwater at wells MW-3 and MW-10 are localized and not widespread." For the same reasons noted above, these are the questions we are attempting to answer by conducting the Data Gap SAP, and thus making these conclusions at this time are premature and should be removed.4) EPA comments and recommendations provided for the Sampling and Analysis Plan should be reviewed and incorporated into the QAPP, as appropriate.

Response: The SAP has been revised as per the general and specific comments listed above. These revisions have also been incorporated into the QAPP as appropriate.

4) EPA comments and recommendations provided for the Sampling and Analysis Plan should be reviewed and incorporated into the QAPP, as appropriate.

Response: The SAP has been revised as per the general and specific comments listed above. These revisions have also been incorporated into the QAPP as appropriate.

Specific Comments:

1) QAPP Worksheet # 1 and 2: The QA manager/officer must sign the QAPP as evidence of appropriate review.

Response: The QA manager/officer signature has been included.

2) QAPP Worksheet # 3 and 5: The project team members and QA manager/officer should be listed in Figure 1-3 (Organization Chart). The reporting relationship/line of authority must be shown for the QA officer.

Response: The organization chart has been revised as requested.

3) QAPP Worksheet #11: Project/Data Quality Objectives, State the Problem**,** b. Description of the Problem: The main goals of the sampling are to delineate the extent of certain constituents in soil, groundwater, pore water, and surface water. It is unclear why sediment was excluded from these goals. Please revise to include sediment.

Develop the Analytic Approach: Action levels are identified for soil, surface water, and groundwater and it is noted that these data will be used in the risk assessments for comparative purposes. However, sediment and pore water should also be included in this discussion. Please revise.

Response: Worksheet #11 has been revised as requested.

4) QAPP Worksheet # 12: Some of the methods presented for this worksheet are not included in the sample listing on Worksheet #18. For example, aqueous PCBs by method SOM01.2 Mercury (ISM01.3 and low level 1631) for aqueous and soil/sediment media are listed on Worksheet #12 (page 32) and Worksheet 28 (page 111) and footnoted on Worksheet #14 (pdf page 47) but are not listed on Worksheet #18, Sampling Locations and Methods. Please clarify if these will be analyzed.

Response: The analyses have been more clearly defined throughout the QAPP to address this comment.

5) Worksheets # 12-5 and 28-5:
a. QC Samples (Metals, Mercury and Cyanide) Interference Check Samples A and AB – Also include the CRQL criteria for this standard.

b. Specify if ICP-AES, or ICP-MS will be required or both.
c. Serial Dilution QC Sample – The Measurement Performance Criteria (MPC) shown applies when the original sample result exceeds 50 times the MDL. Update the MPC.

Response: Worksheets #12-5, 12-11, 28-5, and 28-11 have been revised as requested.

6) Worksheets # 12-6 and 28-6:
a. QC Samples (Low level Mercury) – the incorrect method is shown on both worksheets. Please update to refer to method 1631 and not 1613.
b. Method requires QC samples Initial Ongoing Precision and Recovery standards and a QC Sample; LCS are not mentioned in the method. Please revise.

Response: Worksheets #12-6 and 28-6 have been revised as requested.

7) QAPP Worksheet # 13: This worksheet should include secondary sources of data not the data planned to be collected during this investigation. Secondary sources include data from historical information, previous investigations, and other sources such as literature which were generated for purposes other than this specific study. The data use should cover how the data was used to plan this data gap investigation or how it will be used for future project decisions. Limitation on the data could result from uncertainties in the data quality or changes in site conditions, or lack of records to support the secondary data. Please update this worksheet.

Response: Worksheet #13 has been revised as requested.

8) QAPP Worksheet # 14and 16 (pdf page 45, 2nd page of worksheet, second groundwater sampling event). It is not clear why the second round of sampling at the new monitoring wells is only 30 days after the initial sampling. It is typical to collect a second round of samples during a different time period to provide seasonal variation (wet season vs. dry season). Please revise to perform the second round of sampling spring 2015.

Response: Worksheet #14/16 has been revised as requested.

9) QAPP Worksheet # 14 and 16 (pdf page 54, under Data Analysis and Reporting): The 4th paragraph includes the statement, “If dilutions or re-analyses are included in the EDD, the laboratory must designate which set of results are considered

reportable." Since this is subject to change based on data validation actions, the data validator should make the call on which set is to be used. Please update this sentence.
QAPP Worksheet # 14 and 16 (pdf page 58): Two levels of data reporting are discussed. Please indicate which data reporting level will be used for each analytical group/sampling group.

Response: Worksheet #14/16 has been revised as: "If dilutions or re-analyses are included in the EDD, the laboratory must designate which set of results are considered reportable. The data will be evaluated by the data validator, and will make the final determination of which data is reportable."

Worksheet #14/16 has been revised as: "Laboratory reporting for all parameters groups for soil, sediment, and water will be Level IV, except for the data associated with waste characterization of material (IDW) scheduled for disposal.

10) QAPP Worksheet # 14 and 16: Project Task and Schedule, section on Assessment/ Audit Tasks (page 58): The planed audit frequency described here differs from that on Worksheet # 31, 32 & 33: Assessments and Corrective Action (page 134). Reconcile so they are consistent.
Project Task and Schedule Field Audits: Describe how the confirmation that work is being performed consistent with the QAPP will be documented, format of documentation and title of document.

Response: Worksheet #14 has been revised to be consistent with Worksheet #31/32/33. Confirmation that work is being performed consistent with the QAPP will be documented by a Memorandum once the appropriate personnel have received them the Memorandum will be filed in the project file.

11) QAPP Worksheet # 15: Table 1 is referenced for the project action limits and laboratory-specific detection/quantitation limits, however Table 1 includes just a summary of sample locations, depth and analyses. The action limits are required to evaluate whether the selected methods are appropriate to meet the project sensitivity requirements.

Response: A revised Table 1 is attached.

12) QAPP Worksheet # 17, **Sampling Design and Rationale**, Description of the sampling area, 2nd bullet: The first sentence implies soils are only being sampled

along the southern perimeter of the landfill, however, soil sampling is being conducted along nearly the entire perimeter of the landfill. Please change text accordingly.

Groundwater Samples: In this worksheet it states, “If a sample cannot be collected where planned, the temporary wells may be relocated or may be replaced with surface water samples.” EPA does not agree that a surface water sample is sufficient for replacing a temporary well location. A pore water sample is a more equivalent alternative to a temporary well sample, and thus surface water sample should be replaced with pore water sample. Also, if such a field change were to occur, EPA would like to be notified in real time to provide guidance on how to proceed.

Surface-water samples and Sediment samples: In this section of the worksheet it states, “If a sample cannot be collected where planned, the location may be adjusted. Some of the water bodies where sampling is proposed are small and have not been directly observed during previous activities. They may be ephemeral or smaller than shown in Figures 2a and 2b. In such cases, the samples may be collected elsewhere or eliminated.” Similar to the comment above, EPA would like to be notified in real time to provide guidance on how to proceed.

Response: The SAP has been revised as per the general and specific comments listed above. These revisions have also been incorporated into the QAPP as appropriate.

13) QAPP Worksheet #18: Sampling Locations and Methods: Comments made on the Data Gap SAP relevant to the sampling parameters should also be considered accordingly in this worksheet of the QAPP.

Response: Worksheet #18 has been revised as requested.

14) QAPP Worksheet # 19: The preservation requirement for temperature is inclusive of the 6 degree Celsius. Update the sheet to indicate 0 to 6^{o} C (≤6^{o} C).

Response: Worksheet #19 has been revised as requested.

15) QAPP Worksheet # 19: VOC Soil/sediment container: samples collected with methanol will have elevated reporting limits which may not meet the project objectives. These samples must be shipped with a label indicating their methanol content. Recommend adding a note to this worksheet.

Response: Shipment of these samples will occur by courier. Also note the addition of the following text to WS #4.7. & 8: "All ARCADIS personnel collecting samples have DOT/IATA Hazardous Materials Shipping and Transportation Training (HazMat #1). This training is for filling containers, and preparing, packaging and/or shipping HazMat ground and/or air. Training certificates are available upon request."

16) QAPP Worksheet # 19: An extra vial or sample jar is required for the laboratory to perform soil/sediment moisture determination. Add this information to the worksheet.

Response: Worksheet #19 has been revised as requested.

17) QAPP Worksheet # 19: Method 1668 recommends that soil/sediment PCB congener samples be stored in the dark at <-10^{o} C to achieve the one year holding time. Update the worksheet.

Response: Worksheet #19 has been revised as requested.

18) QAPP Worksheet # 20: Footnote c suggests that the sampling is already completed ("… samples were collected"). Please update language to reflect what will be done.

Response: Worksheet #20 has been revised as requested.

19) QAPP Worksheet # 23: Delete SOP TAB-6 if regular level mercury (ISM01.) will not be analyzed.

Response: All samples with the exception surface waters will be analyzed by regular level mercury (ISM01.). Surface water samples will be analyzed by the low level mercury method 1631. The QAPP has been modified to reflect this.

20) QAPP Worksheets # 24 and 25: Add TOC analyzer instrument.

Response: TOC analyzer has been added to Worksheets #24 and 25.

Conclusion

With the submittal of the revised Data Gaps SAP and QAPP, the Settling Parties are ready to begin field implementation. Please provide your approval of these documents at the earliest possible date.

Sincerely,
ARCADIS U.S., Inc.

John L. Persico, P.G.
Principal Geologist

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